IN THE CLAIMS:

Please amend the claims as follows:

1. (previously presented) A method of automatic human identification, said method comprising matching an image of a subject's ear against a database of images of ears of identified subjects to identify said subject, wherein said database of images comprises a three-dimensional image of an ear of each of a plurality of identified subjects and a plurality of two-dimensional images generated from each of said three-dimensional images, wherein each of said two-dimensional images represents a varied orientation or illumination condition on a corresponding three-dimensional image.

2. (original) The method of claim 1, further comprising generating said database of images of identified ears.

3. (previously presented) The method of claim 2, wherein said generating said database of images comprises:

generating a three-dimensional image of an identified subject's ear; and

generating said plurality of two-dimensional images of said identified subject's ear based on said three-dimensional image.

4. (original) The method of claim 3, wherein said step of generating a three-dimensional image of an identified subject's ear comprises:

illuminating said subject with a light source having a variable intensity pattern;

imaging said illuminated subject with a charge-coupled device camera, said charge coupled device camera separated from said light source by a known baseline distance; and

calculating a distance to a point on said subject using a triangulation method based on a baseline distance between said light source and said camera, an angle between said camera and said baseline, and an angle at which light striking said point is emitted by said light source as determined from an intensity of a light striking said point.

5. (original) The method of claim 1, wherein said step of matching an image of a subject's ear against a database further comprises performing an Eigen-ear method.

6. (original) The method of claim 5, wherein said Eigen-ear method comprises:

performing an Eigen-ear classification procedure; and

performing an Eigen-ear recognition procedure.

7. (original) The method of claim 6, wherein said Eigen-ear classification procedure comprises computing a weight vector of said image of a subject's ear.

8. (original) The method of claim 7, wherein said Eigen-ear recognition procedure comprises identifying said image of a subject's ear as belonging to a class if a vector in said database is found that minimizes a Euclidean distance to said weight vector below a threshold value.

9. (original) The method of claim 1, wherein said image of a subject's ear is collected by a pan/tilt/zoom (PTZ) surveillance camera.

10. (original) The method of claim 1, further comprising:

surveying a location with an omnidirectional camera;

acquiring a high-resolution image of said subject with a PTZ surveillance camera based on information provided by said omnidirectional camera; and

generating said image of a subject's ear from said high-resolution image.

11. (previously presented) The method of claim 12, further comprising:

matching an input image of an ear with images of said database.

12. (previously presented) A method of creating and using a database of ear images for automatic human identification comprising:

generating a three-dimensional image of an ear for each of a number of identified people; and

generating a database comprising a plurality of two-dimensional images based on each said three-dimensional image;

wherein each of said plurality of two-dimensional images represents a varied orientation or illumination condition on said three-dimensional image.

13. (original) The method of claim 12, wherein said step of generating a three-dimensional image of an identified person's ear comprises:

illuminating said person with a light source having a variable intensity pattern;

imaging said illuminated person with a charge-coupled device camera, said charge coupled device camera separated from said light source by a known baseline distance; and

calculating a distance to a point on said person using a triangulation method based on a baseline distance between said light source and said camera, an angle between said camera and said baseline, and an angle at which light striking said point is emitted by said light source as determined from an intensity of a light striking said point.

14. (original) The method of claim 11, wherein said step of matching an input image of an ear with images of said database comprises performing an Eigen-ear method.

15. (original) The method of claim 14, wherein said Eigen-ear method comprises:

performing an Eigen-ear classification procedure; and

performing an Eigen-ear recognition procedure.

16. (original) The method of claim 15, wherein said Eigen-ear classification procedure comprises computing a weight vector of said image of a subject's ear.

17. (original) The method of claim 16, wherein said Eigen-ear recognition procedure comprises identifying said input image of an ear as belonging to a class if a vector in said database is found that minimizes a Euclidean distance to said weight vector below a threshold value.

18. (original) The method of claim 11, wherein said input image of an ear is collected by a pan/tilt/zoom (PTZ) surveillance camera.

19-21. (cancelled)

22. (currently amended) An image matching method comprising performing an Eigen-ears identification method, said method further comprising:

performing an Eigen-ear classification procedure on a plurality of two-dimensional ear images; and

performing an Eigen-ear recognition procedure on a received two-dimensional ear image.

wherein said Eigen-ear classification procedure comprises:

computing a weight vector of each of said two dimensional ear images;

said plurality of two-dimensional ear images being classified according to said weight vectors; and

~~The method of claim 21,~~ wherein said Eigen-ear recognition procedure comprises:

computing a weight vector of said received two-dimensional ear image; and

identifying said received two-dimensional ear image as belonging to a class if one of said weight vectors minimizes a Euclidean distance to said weight vector of said two-dimensional ear image below a threshold value.

23. (withdrawn) A database generation method comprising:

generating a three-dimensional image of an identified subject; and

generating a plurality of two-dimensional images of said identified subject based on said three-dimensional image;

wherein each of said plurality of two-dimensional images represents a varied orientation or illumination condition on said three-dimensional image.

24. (withdrawn) The method of claim 23, wherein said step of generating a three-dimensional image of an identified subject comprises:

illuminating said subject with a light source having a variable intensity pattern;

imaging said illuminated subject with a charge-coupled device camera, said charge coupled device camera separated from said light source by a known baseline distance; and

calculating a distance to a point on said subject using a triangulation method based on a baseline distance between said light source and said camera, an angle between said camera and said baseline, and an angle at which light striking said point is emitted by said light source as determined from an intensity of a light striking said point.

25. (withdrawn) The method of claim 23, wherein said step of generating a plurality of two-dimensional images of said identified subject based on said three-dimensional image comprises:

variably orienting an artificial light source with respect to said three-dimensional image;

calculating a modulation from a reflectance model based on said three-dimensional image and each of said artificial light source orientations; and

combining a two-dimensional texture information at each pixel of said three-dimensional object with said modulation to produce a plurality of two-dimensional images under said variable light orientations.

26. (withdrawn) The method of claim 23, wherein said three-dimensional image comprises one of a head or an ear of said identified subject.

27. (previously presented) A system for three-dimensional biometric identification comprising:

a camera system;

a database of images of identified ears, wherein said database of images comprises a three-dimensional image of an ear of each of a plurality of identified subjects and a plurality of two-dimensional images generated from each of said three-dimensional images, wherein each of said two-dimensional images represents a varied orientation or illumination condition on a corresponding three-dimensional image; and

a computing device communicatively coupled to said camera system and to said database of images of identified ears;

wherein said computing device is configured to match an image of a subject's ear acquired by said camera system against said database of images of identified ears to identify said subject.

28. (original) The system of claim 27, wherein said camera system comprises:
an omnidirectional camera; and
a pan/tilt/zoom camera.

29. (original) The system of claim 27, wherein said computing device is further configured to match an image of a subject's ear acquired by said camera system against said database of images of identified ears using an Eigen-ear method.

30. (original) The system of claim 29, wherein said Eigen-ear method comprises
performing an Eigen-ear classification procedure; and
performing an Eigen-ear recognition procedure.

31. (original) The system of claim 30, wherein said Eigen-ear classification procedure comprises computing a weight vector of said image of a subject's ear.

32. (original) The system of claim 31, wherein said Eigen-ear recognition procedure comprises identifying said input image of an ear as belonging to a class if a vector in said database is found that minimizes a Euclidean distance to said weight vector below a threshold value.

33. (original) The system of claim 27, wherein said computing device is further configured to perform a face/ear image extraction process on an image received from said camera system.

34. (original) The system of claim 27, wherein said computing device is configured to generate an alarm signal if said image of a subject's ear does not match an image in said database of images of identified ears.

35. (withdrawn) A system for generating an image database comprising:

a three-dimensional camera; and

a computing device communicatively coupled to said three-dimensional camera;

wherein said computing device is configured to receive a three-dimensional image from said three-dimensional camera and generate multiple two-dimensional images, each two-dimensional image having a varied orientation or illumination condition based on said three-dimensional image.

36. (withdrawn) The system of claim 35, wherein said three-dimensional camera comprises:

a light projector configured to project light in a variable intensity pattern; and

a charge coupled device configured to receive said projected light after said projected light is reflected off of a desired object.

37. (withdrawn) The system of claim 36, wherein said three-dimensional camera comprises a Rainbow-type 3D camera.

38. (withdrawn) The system of claim 35, wherein said computing device is configured to generate said multiple two-dimensional images by:

variably orienting an artificial light source with respect to said three-dimensional image;

calculating a modulation from a reflectance model based on said three-dimensional image and each of said artificial light source orientations; and

combining a two-dimensional texture information at each pixel of said three-dimensional object with said modulation to produce a plurality of two-dimensional images under said variable light orientations.

39. (withdrawn) The method of claim 38, wherein said three-dimensional image comprises one of a head or an ear of an identified subject.

40. (previously presented)A system for three-dimensional biometric identification comprising:

a means for generating a two-dimensional image of a subject's ear;

a database of images of identified ears, wherein said database of images comprises a three-dimensional image of an ear of each of a plurality of identified subjects and a plurality of two-dimensional images generated from each of said three-dimensional images, wherein each of said two-dimensional images represents a varied orientation or illumination condition on a corresponding three-dimensional image; and

a means for matching said two-dimensional image of a subject's ear against said database of images of identified ears to identify said subject.

41. (original) The system of claim 40, wherein said means for generating a two-dimensional image of a subject's ear comprises a camera system.

42. (original) The system of claim 40, wherein said means for matching is further configured to match an image of a subject's ear acquired by said means for generating a two-dimensional image against said database of images of identified ears using an Eigen-ear method.

43. (original) The system of claim 42, wherein said Eigen-ear method comprises

performing an Eigen-ear classification procedure; and

performing an Eigen-ear recognition procedure.

44. (original) The system of claim 43, wherein said Eigen-ear classification procedure comprises computing a weight vector of said image of a subject's ear.

45. (original) The system of claim 44, wherein said Eigen-ear recognition procedure comprises identifying said input image of an ear as belonging to a class if a vector in said database is found that minimizes a Euclidean distance to said weight vector below a threshold value.

46. (original) A system for generating an image database comprising:

a means for generating a three-dimensional image of a subject; and

a computing device communicatively coupled to said means for generating a three-dimensional image;

wherein said computing device is configured to receive a three-dimensional image from said means for generating a three-dimensional image and generate multiple two-dimensional images, each two-dimensional image having a varied orientation or illumination condition based on said three-dimensional image.

47. (original) The system of claim 46, wherein said three-dimensional imaging means comprises:

a means for projecting light having a variable pattern on a subject; and

a means for sensing said projected light configured to receive said projected light after said projected light is reflected off of a desired object.